



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,014	12/14/2004	Takuya Arase	Q84708	1932
23373	7590	03/21/2007	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			HU, HENRY S	
			ART UNIT	PAPER NUMBER
			1713	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/21/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/518,014	ARASE ET AL.	
	Examiner	Art Unit	
	Henry S. Hu	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on Pre-Amendment of December 14, 2004.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-10 is/are rejected.
- 7) Claim(s) 5 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date 2 pages.
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

1. This Application 10/518,014 is from 371/PCT/JP03/07615. It is noted that USPTO has received **Pre-Amendment and two IDS'** (one page each) filed on December 14, 2004, December 14, 2004 and March 4, 2005 respectively. **Claims 3, 5-6, 8 and 10 were amended** but only to remove improper multiple claim dependency. **Claims 1-10 with only one independent claim (Claim 1) are now pending.** An action follows.

Claim Objections

2. Claim 5 is objected to because of the following informalities:

On **Claim 5** at lines 3-4, a typographical error is found. Examiner suggests using the language such as "and wherein fluorovinyl ether derivative having a formula (I) is $CF_2=CF-O-CF_2CF_2-SO_2F$ " to replace the sentence of "n is 0 (zero), m is 2 and A is $-SO_2F$ ".

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 1713

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The limitation of parent **Claim 1** in present invention relates to *a method for producing a fluorocopolymer which comprises a polymerization reaction of: (A) a fluorine-containing ethylenic monomer with (B) at least one fluorovinyl ether derivative represented by $CF_2=CF-O-[CF_2CF(CF_3)O]_n-(CF_2)_m-A$ (I)*

Said fluorine-containing ethylenic monomer (A) being:

(a1) a perhaloethylenic monomer represented by $CF_2=CF-R_f^1$ (II) and/or (a2) a hydrogen-containing fluoroethylenic monomer represented by $CHX^1=CFX^2$ (III)

All the factors in monomers are specified. Said polymerization reaction being carried out in a saturated perfluorohydro-carbon solvent.

*See other limitations of dependent **Claims 2-10**.*

5. **Claims 1, 3-6 and 8-10** are rejected under 35 U.S.C. 102(b) as being anticipated by each of four references including Connolly et al. (US 3,282,875), Grot (US 5,281,680 or its equivalent EP 606,842 A1), GB Patent No. 1,034,197 (no inventor cited) and Atsushi et al. (JP 6-157,675).

Regarding the copolymerization limitation of parent **Claim 1**, each of four references including **Connolly, Grot, GB Patent No. 1,034,197 and Atsushi** has individually disclosed the copolymerization of the claimed monomers in the presence of claimed saturated perfluoroalkane

(as a polymerization medium). For instance, one sulfonic acid group-containing or its precursor and/or derivative-containing perfluorinated ether type monomer may be used. It has formula (I) and is found to be copolymerized with at least one fluorinated olefin monomer having formula (II) and/or formula (III). It is noted that the precursor and/or derivative for sulfonic acid functional group may be its fluoride, amine or metal salt. For instance, see GB Patent No. 1,034,197 at page 1, line 15-23. See search report in this application's priority paper WO 2004/007576 A1 to Arase et al.

To be more specific, see **Connolly** at column 1, line 13-21 and 51-71 for monomers; column 2, line 49-52 for polymerization solvent; see **Grot** column 3, line 42-47 for monomers; column 4, line 65-68 for polymerization solvent; **GB Patent No. 1,034,197** at page 1, line 47 – page 2, line 6 for monomers; page 2, line 84-101 for polymerization solvent; and see **Atsushi** at English abstract, line 1-5 for monomers and polymerization solvent. Therefore, each reference anticipates limitation of parent Claim 1.

6. Regarding **Claims 3 and 4**, the claimed linear-type saturated perfluoroalkane has been disclosed by the references as a polymerization medium.

Regarding **Claims 8-10**, the claimed sulfonic acid group or derivative-containing copolymers have been specifically used to make the claimed articles such as membrane so as to be useful in making fuel cell. For instance, see Grot at abstract line 5-6.

Remaining dependent **Claims 5-6** are thereby rejected with the same reason for the rejection of parent Claim 1.

7. **Claims 2 and 7** are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over each of four references including Connolly et al. (US 3,282,875), Grot (US 5,281,680 or its equivalent EP 606,842 A1), GB Patent No. 1,034,197 and Atsushi et al. (JP 6-157,675).

The discussion of the disclosures of the prior art of for Claims 1, 3-6 and 8-10 of this office action is incorporated here by reference. Regarding dependent **Claims 2 and 7**, each of four references is silent about two things as: (A) the polymerization reaction will result a ratio of mass/volume at least 30 g/L for Claim 2 and (B) ΔH of final polymer will satisfy two relations (a) and (b) for Claim 7.

8. In light of the fact that the prior art and the present invention recite substantially identical fluorinated sulfonyl-containing copolymers, which may be polymerized in the same process as well as using the same type perfluorinated solvent as polymerization medium, a reasonable basis exists to believe that the products of the invention inherently possess the same two properties such as ratio of mass/volume and ΔH value. Since PTO does not have proper means to conduct experiments, the burden of proof is now shifted to Applicants to show otherwise. *In re Best*, 195 USPQ 430 (CCPA 1977). See MPEP 2112-2112.02.

It has been held that where applicant claims a composition in terms of function, property or characteristic where said function is not explicitly shown by the reference and where the examiner has explained why the function, property or characteristic is considered inherent in the prior art, it is appropriate for the examiner to make a rejection under both the applicable section of 35 USC 102 and 35 USC 103 such that the burden is placed upon the applicant to provide clear evidence that the respective compositions do in fact differ. *In re Best*, 195 USPQ 430, 433 (CCPA 1977); *In re Fitzgerald et al.*, 205 USPQ 594, 596 (CCPA 1980).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to a method for producing a fluorocopolymer comprising $\text{CF}_2=\text{CF}-\text{O}-[\text{CF}_2\text{CF}(\text{CF}_3)\text{O}]_n-(\text{CF}_2)_m-\text{A}$ with comonomer(s) of $\text{CF}_2=\text{CF}-\text{R}_f^1$ and/or $\text{CHX}^1=\text{CFX}^2$ in a saturated perfluorohydro-carbon solvent:

JP 6-234,816 to Masayuki et al. has disclosed the preparation of sulfonyl-containing copolymers comprising the claimed monomers (abstract, line 1-4). However, hydrochlorofluorocarbon such as 1,1-dichloro-2,2,3,3,3-pentafluoropropane is used as medium for solution polymerization. Hydrochlorofluorocarbon is certainly containing hydrogen atom, it thereby cannot be related to a saturated perfluorohydrocarbon. Therefore, Masayuki fails to teach or fairly suggest the process limitation of present invention.

10. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu whose telephone number is (571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Henry S. Hu

Patent Examiner, Art Unit 1713, USPTO

March 18, 2007

hsh
DAVID W. WU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700